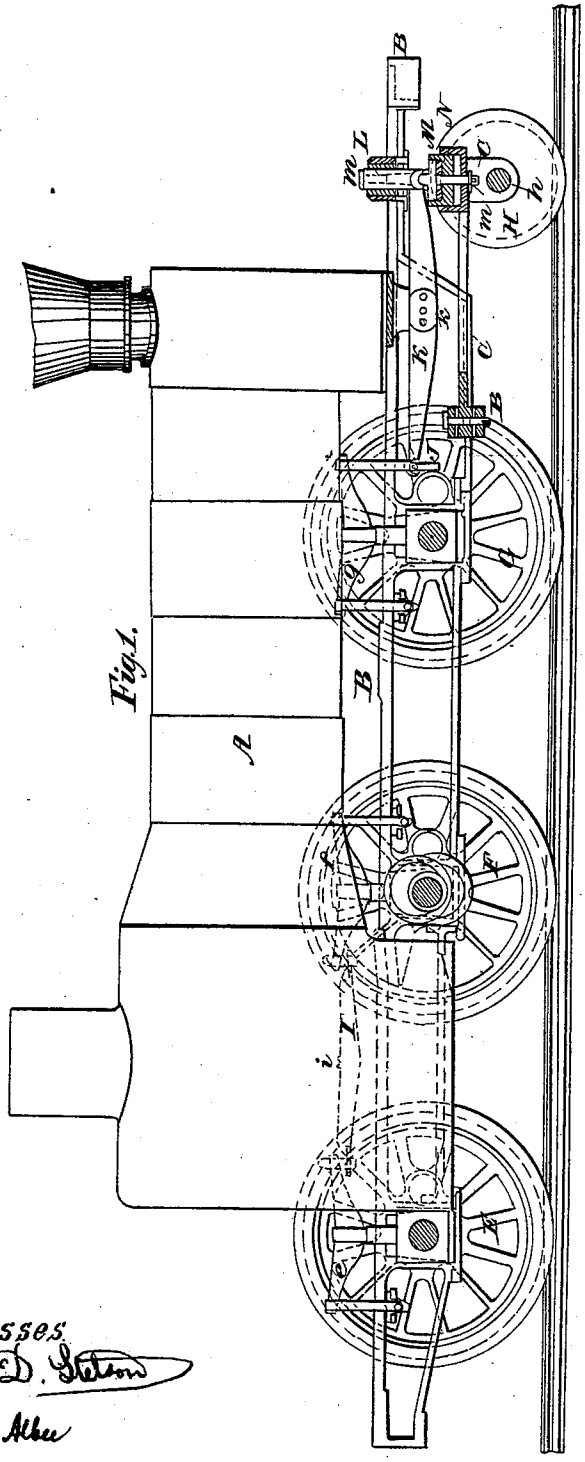
2 Sheets—Sheet 1.

W. S. HUDSON.

Car Truck.

No. 42,662. Patented May 10, 1864.



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2 Sheets—Sheet 2.

W. S. HUDSON.

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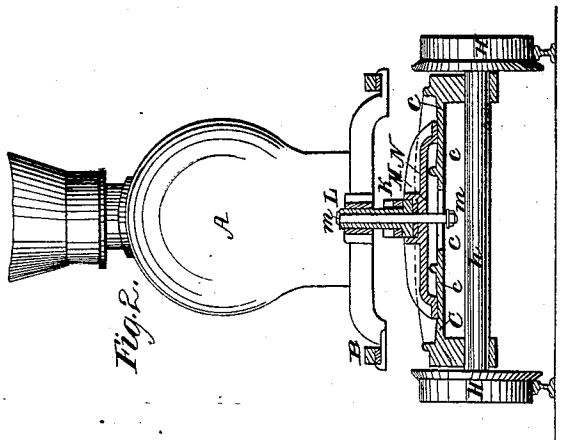


Fig. 2.

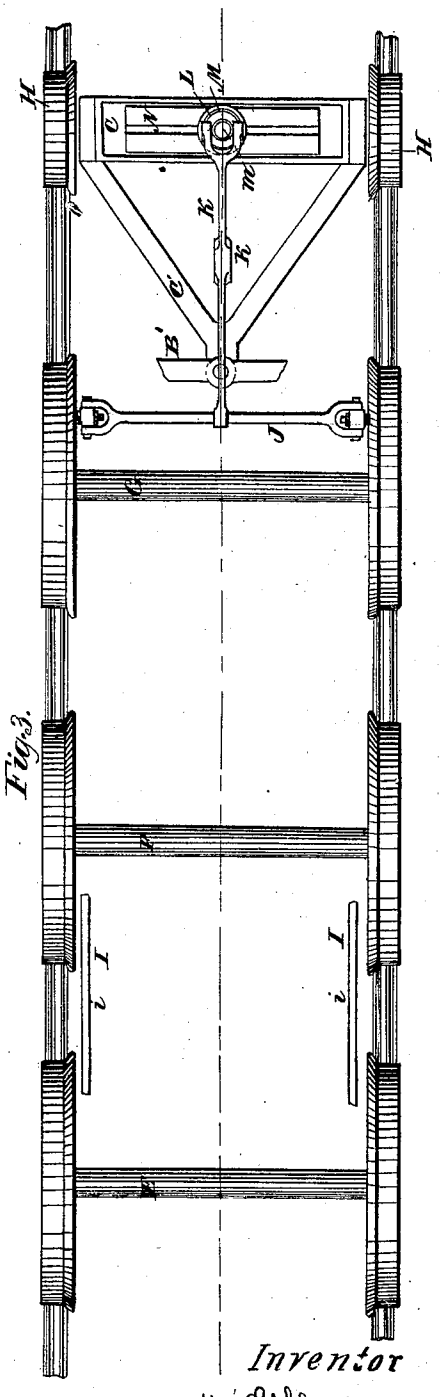


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM S. HUDSON, OF PATERSON, NEW JERSEY.

IMPROVEMENT IN TRUCKS FOR LOCOMOTIVES.

Specification forming part of Letters Patent No. **42,662**, dated May 10, 1864.

To all whom it may concern:

Be it known that I, WILLIAM S. HUDSON, of Paterson, in the county of Passaic, in the State of New Jersey, have invented a certain new and useful Improvement in Trucks for Locomotives; and I do hereby declare that the following is a full and exact description thereof.

My invention relates to the construction and arrangement of certain equalizing-levers relatively to other parts. By it the weight is well distributed and the shocks and strains are made less violent.

The accompanying drawings form a part of this specification, and represent the novel parts, with so much of the other parts as is necessary to properly understand the invention.

Figure 1 is a central longitudinal vertical section through the running-gear, or the axles and framing of a locomotive. Fig. 2 is a vertical cross-section in the plane of the axle of the truck or forward pair of wheels. Fig. 3 is a plan view of the wheels and axles with a portion of the framing and equalizing-levers.

Similar letters of reference indicate like parts in all the figures.

Tints are employed to aid in distinguishing parts, and not to indicate the material, which may be all iron.

To enable others skilled in the art to make and use my invention, I will proceed to describe it by the aid of the drawings and of the letters of reference marked thereon.

A is the boiler, B is the framing, C is the truck-frame, and B′ is the center-pin, of a locomotive provided with what is sometimes known as a "Bissell Single Truck," and with three pairs of driving-wheels.

E, F, and G are the several pairs of driving-wheels, and H is a single pair of truck-wheels.

The Bissell truck is well known to the constructers and users of locomotives, and is described in patents issued to Levi Bissell, dated the 4th of August, 1857, and November 2, 1858. The chief peculiarity of the Bissell truck is its provision for allowing the front end of the locomotive to move sidewise upon the truck in entering upon curves by sliding upon moderately-inclined ways, *c c*, provided for the purpose, and for guiding the truck by the pin B′, which connects a rigid extension, C′, on the rear of the truck to a cross-bar on the fixed framing of the engine. All these parts, so far as I have yet described them, are constructed and arranged in a manner which has long been known.

The springs *e* and *f* over the bearings of the drivers E and F are connected by equalizing-levers I, pivoted to the frame B at the point *i*. The springs *g* over the bearings of the forward drivers, G, are connected to a cross-lever or stout bar, J. The center of this bar J supports the rear end of a lever, K, which extends forward under the center line of the boiler, and is pivoted at the point *k*. The forward end of this lever K is forked as represented, and is supported on a stout bushing, L, which is free to move vertically in a corresponding cylindrical cavity in the framing B. The lower end of this bushing L is spread or extended to present a considerable surface, and rests on a bed of rubber, which is contained in a suitable recess in the top of the carrying-piece N. The bolt *m* extends vertically through the entire bushing L, the rubber M, and the carrying-piece N. It is also continued downward through a transverse slot, *c′*, in the framing C, and is provided with a washer and split key, as represented.

It will be observed that the lever K supports the center of the forward end of the boiler at the point *k*, and that it is itself supported by resting its weight partly upon the forward driving-wheels, G, and partly upon the truck-wheels H. The lever K is free to tilt or vibrate in the vertical plane on the pivot *k*, and the arrangement of all the parts connected therewith causes the driving-wheels G and truck-wheels H to mutually operate together in their relation to the irregularities in the track in the same manner as do the several wheels in a four-wheeled center-bearing truck.

The truck-frame C C′, the single pair of truck-wheels H, with their axle *h*, moves sidewise relatively to the other parts in the same manner as do the corresponding parts of an ordinary two-wheeled Bissell truck. In doing so every part, of course, describes a small arc of a circle, the center of which circle is at B′. The bearing-piece N is a little narrower than the recess in C, in which it is carried, so as never to bind on its front or rear face, as the truck performs these slight swivel movements, and it is free to swivel therewith by the elas-

ticity of the rubber M or by the slight turning of the bushing L in the framing above. The angle within which all the turning of these parts is practically effected is very slight, too slight to be seriously felt, either by the rubber, in case it is compelled to yield by twisting slightly upon itself, or by the bearings on which the forked end of the lever K rests, in case they are compelled to allow a portion of the motion.

If tracks could be made perfectly uniform and regular, and be maintained in that condition, my invention would be of little importance, but in practice irregularities more or less serious occur at nearly every joint or junction of the ends of the rails, and at certain points in the track, as in passing switches and across tracks, and especially in passing over small obstacles or defects in the road, the irregularity in the load, which is thrown upon the several wheels, becomes immense, unless, in addition to the use of springs, provision is made by introducing equalizing levers in some manner, to induce a unity of action between each pair of wheels and some other pair. The three pairs of drivers E, F, and G have been connected together by equalizing-levers; but I have never known the two pairs E and F to be connected together into one system, and the forward drivers, G, to be connected to the truck-wheels, so as to form another and independent system, previous to my invention. My invention practically supports the forward portion of the structure at the point *k*, and the rear portion of the structure on two points, *i i*, opposite the sides of the fire-box, thus making a triangle on which the structure is carried, with a certainty of holding each wheel with just sufficient force upon the track, and yielding easily and safely to every ordinary inequality.

The Bissell truck may be provided with four pairs of wheels, thus making a ten-wheeled engine, and my invention may be applied thereto by arranging the levers J K and their connections in the same manner as above described. It is also obvious that springs may be introduced in the truck in any approved manner. I prefer to employ ordinary boxes and jaws instead of the plain bearings represented in the truck, and to introduce rubber springs or elliptic springs either in the jaws between the boxes and the frame or above the frame directly over each bearing.

I usually introduce a thin annular plate or broad washer of iron over the rubber spring M, as indicated by the two lines close together in that portion of the drawings. This allows the broad bearing-base to slip around with ease upon the top of the rubber M by the slight friction between the broad bearing-base of L and the metal of the washer. This makes in fact still another provision for allowing the truck to swivel.

Having now fully described my invention, what I claim as new therein, and desire to secure by Letters Patent, is as follows:

1. In locomotives disconnecting the forward pair of drivers G from the equalizing mechanism which connects the drivers E and F, and equalizing between the drivers G and the bearing-wheels of the truck, so as to form independent equalizing devices, the forward one of which includes the forward drivers and the truck, substantially as and for the purpose herein set forth.

2. The transverse bearing-bar J and lever K, in combination with the forward pair of drivers G, and two or more truck-wheels, H, and arranged relatively to each other and to the other parts substantially in the manner and for the purpose herein set forth.

3. The bushing L, adapted to move vertically through the framing B, and arranged relatively to the truck-frame C, and equalizing-lever K, substantially as and for the purpose herein set forth.

4. In combination with the last, the rubber spring M, arranged relatively to the bushing L, and to the bearing-piece N, substantially as and for the purposes herein set forth.

WM. S. HUDSON.

Witnesses:
T. D. STETSON,
H. A. ALBEE.